

Zero-Voltage-Switching Single-switched Resonant DC Link with Minimized
Conduction Loss

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ABSTRACT

[0051] A Single-switched Resonant DC Link (SRDCL) converter is presented for a parallel resonant network with a single auxiliary power device for low conduction loss in single or poly-phase inverter and converter applications. The resonant network with an auxiliary power device is activated when the status of power devices coupled to the DC link changes. The resonant network forces the DC link voltage to drop to zero before any of the power devices coupled to the DC link are turned on. The auxiliary switch is also turned on with a Zero-Voltage Switching condition. Therefore, the switching losses caused in all power devices can be effectively eliminated. There is no severe conduction loss in the auxiliary power device because the resonant circuit is not activated if there is no change of status in the power devices coupled to the DC link.